

# (12) UK Patent Application (19) GB (11) 2 323 289 (13) A

(43) Date of A Publication 23.09.1998

(21) Application No 9803800.3

(22) Date of Filing 25.02.1998

(30) Priority Data

(31) 9705537

(32) 18.03.1997

(33) GB

(71) Applicant(s)

**Smiths Industries Public Limited Company**  
(Incorporated in the United Kingdom)  
765 Finchley Road, LONDON, NW11 8DS,  
United Kingdom

(72) Inventor(s)

**Eric Pagan**

(74) Agent and/or Address for Service

**J M Flint**

765 Finchley Road, LONDON, NW11 8DS,  
United Kingdom

(51) INT CL<sup>6</sup>

**A61M 16/04**

(52) UK CL (Edition P )

**A5R RGEX**

(56) Documents Cited

**GB 2205499 A**

**WO 97/12641 A1**

(58) Field of Search

UK CL (Edition P ) **A5R RGEX**

INT CL<sup>6</sup> **A61M 16/00 16/04**

Online:WPI

(54) Abstract Title

**Laryngeal mask assembly**

(57) A laryngeal mask assembly has a tube with a mask portion at its patient end, the tube opening into the centre of the mask portion. The mask portion is formed by a mount 15 attached to the tubes and by a bag-shape cuff 16 attached to the mount. The mount 15 is formed with two laterally-projecting flaps 31 and 32 defining a dumbbell-shape opening to the tube. The flaps 31 and 32 deflect the epiglottis during insertion of the airway into the patient but can be deflected by a suction tube, or the like, inserted through the tube.

Fig.2.

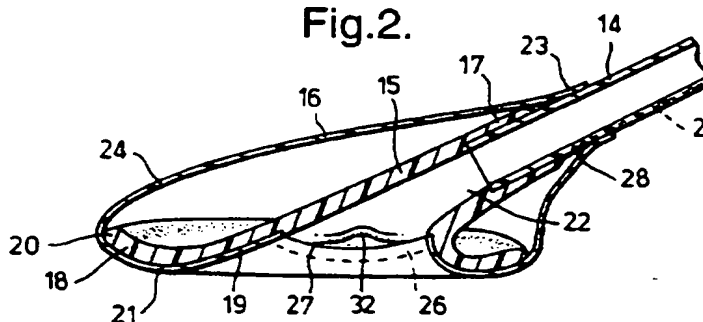
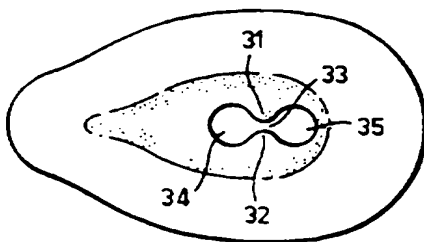


Fig.3.



GB 2 323 289 A

Fig.1.

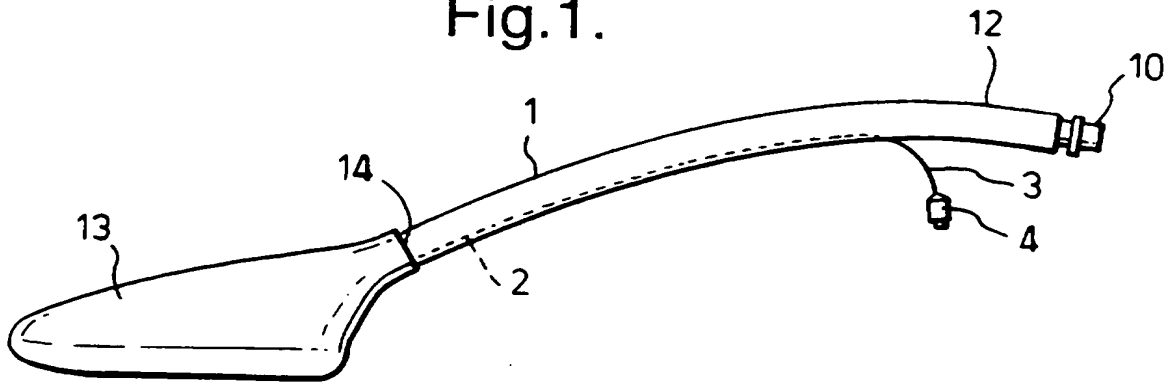


Fig.2.

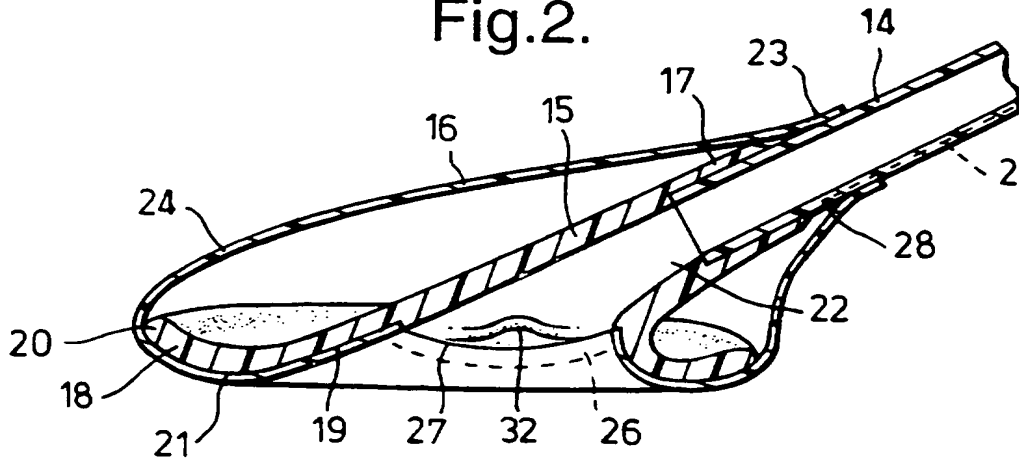
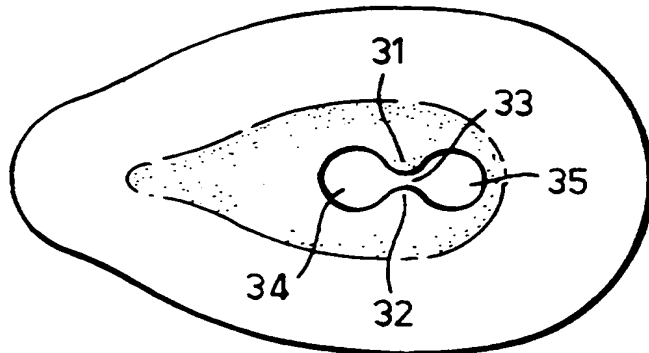


Fig.3.



### Laryngeal Mask Assemblies

This invention relates to laryngeal mask assemblies

It is common practice to use an airway known as a laryngeal mask for the administration of anaesthetic and ventilation gases to a patient. These airways comprise a tube with an inflatable mask or cuff at one end, the tube being inserted in the patient's mouth so that one end is located in the hypopharynx and so that the mask forms a seal in this region with the surrounding tissue. Laryngeal masks are described in, for example, US 5355879, US 5305743, US 5297547, US 5282464, GB 2267034, US 5249571, US 5241956, US 5303697, GB 2249959, GB 2111394, EP 448878, US 4995388, GB 2205499, GB 2128561 and GB 2298797.

Laryngeal masks have several advantages over endotracheal tubes, which are longer and seal with the trachea below the vocal folds. One problem with laryngeal mask airways, however, is that there is a risk that the epiglottis can enter the air passage through the airway during insertion, thereby causing a blockage. In GB-A-2205499 there is described a laryngeal mask having bars extending across the patient-end opening of the tube into the mask, to prevent the epiglottis entering the opening.

It is an object of the present invention to provide an improved laryngeal mask assembly.

According to the present invention there is provided a laryngeal mask assembly comprising a tube with a mask portion at its patient end, the tube having an opening into the centre of the mask portion, the mask portion having at least one flap member projecting laterally across a part only of said opening, so as to deflect the epiglottis away from the

opening during insertion, and the flap member being deflectable by an elongate member inserted along the tube.

The mask portion preferably has two flap members projecting laterally towards one another from opposite sides, both flap members deflecting the epiglottis away from the opening and being deflectable by an elongate member inserted along the tube. The flap members may provide a dumbbell shape to the opening. The mask portion may comprise a mount member attached with the tube and a cuff attached with the mount member, the or each flap member being formed from the material of the mount member. The cuff may be a bag-shape member attached with the mount member adjacent the or each flap member.

A laryngeal mask airway assembly according to the present invention, will now be described, by way of example, with reference to the accompanying drawing, in which:

Figure 1 is a side elevation view of the assembly;

Figure 2 is a sectional side elevation view of the patient end of the assembly to an enlarged scale; and

Figure 3 is a view from below of the patient end of the assembly.

The assembly comprises a bendable tube 1 of a plastics material, such as PVC, with a coupling 10 at its machine end 12. The tube 1 is curved along its length and has a mask portion 13 at its patient end 14.

The tube 1 is extruded with an inflation lumen 2 within its wall. The lumen 2 is connected towards the machine end of the assembly to an inflation line 3 with an inflation indicator and connector 4. The opposite, patient end of the inflation lumen 2 opens into the mask portion 13.

The mask portion 13 comprises a mount member 15 and a flexible bag member 16. The mount member 15 is moulded from a bendable plastics material, such as PVC. The mount member 15 has a hollow cylindrical sleeve 17 at its rear end, in which the forward, patient end 14 of the tube 1 is inserted and joined. The forward, patient end 18 of the mount member 15 is of an inverted dish shape with a generally elliptical or egg-shape outline and with a concave recess 19. The peripheral edge 20 of the mount member 15 is curved rearwardly to form a convex peripheral forward surface 21 lying on a flat plane inclined at an angle of about 30° to the axis of the patient end of the tube 1. The sleeve 17 has a bore 22 at its rear end communicating with the passage through the tube 1, and opens at its forward end into the recess 19.

The bag member 16 is blow moulded from a flexible, resilient plastics material, such as PVC, polyurethane, silicone, EVA, TPE, polyether block amide or the like. The bag 16 has a sock shape with an open ankle or neck portion 23 at its upper, rear end and an egg shape lower, forward foot portion 24 shaped with the same general outline as the mount member 15. The bag 16 encompasses the forward end of the assembly, enclosing the entirety of the mount 15 and having its neck 23 attached to the outside of the forward end 14 of the tube 1, such as by solvent, adhesive or welding. The bag 16 is also attached to the concave recess 19 of the mount 15 along an annular band 26 extending around the opening of the bore 22, to seal the bag material to the mount. A hole 27 in the bag 16 provides an opening to the bore 22 in the mount member 15. The bag 16 provides an inflatable cuff at the forward end of the assembly

and communicates with the inflation lumen 2 by means of an opening 28 cut through the outer surface of the tube 1 below the point where the bag is attached to the tube.

The mount member 15 also has an epiglottis deflector provided by two flaps 31 and 32, formed from the material of the mount member, just behind the hole 27 in the bag 16. The flaps 31 and 32 extend parallel to the plane containing the forward surface 21 of the mount member 15 and project laterally inwardly towards the major axis of the elliptical shape of the end of the mount member. The flaps 31 and 32 are of approximately semicircular shape and, at their closest separation, are spaced by a small gap 33. In this way, the opening into the tube 1 is divided into two pear-shape regions 34 and 35 separated by the gap 33, giving the opening into the bore through the tube a dumbbell or keyhole shape.

The stiffness of the material forming the two flaps 31 and 32 is sufficient to deflect the epiglottis during insertion of the mask assembly, but the flaps bend readily to allow a suction catheter, or the like to be inserted along the tube 1 and project from the mask portion.

CLAIMS

1. A laryngeal mask assembly comprising a tube with a mask portion at its patient end, the tube having an opening into the centre of the mask portion, wherein the mask portion has at least one flap member projecting laterally across a part only of said opening, so as to deflect the epiglottis away from the opening during insertion, and wherein said flap member is deflectable by an elongate member inserted along the tube.
2. A laryngeal mask assembly according to Claim 1, wherein the mask portion has two flap members projecting laterally towards one another from opposite sides, and wherein both said flap members deflect the epiglottis away from the opening and are deflectable by an elongate member inserted along the tube.
3. A laryngeal mask assembly according to Claim 2, wherein said flap members provide a dumbbell shape to said opening.
4. A laryngeal mask assembly according to any one of the preceding claims, wherein said mask portion comprises a mount member attached with said tube and a cuff attached with said mount member, and wherein the or each flap member is formed from the material of said mount member.
5. A laryngeal mask assembly according to Claim 4, wherein the cuff is a bag-shape member attached with said mount member adjacent the or each flap member.

6. A laryngeal mask assembly substantially as hereinbefore described with reference to the accompanying drawing.
7. Any novel and inventive feature as hereinbefore described.





Application No: GB 9803800.3  
Claims searched: 1-6

Examiner: Peter Davey  
Date of search: 18 May 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): A5R (RGEX)

Int Cl (Ed.6): A61M 16/00 16/04

Other: Online: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2205499 A (BRAIN), see eg. Fig. 3 and page 6, lines 21-22	1 at least
P,X	WO 97/12641 A1 (BRAIN), 10 April 1997, see eg. Figs. 3 and 5	1 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

**This Page Blank (uspto)**